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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/015,394
Filing Date: December 11, 2001
Appellant(s): BAKER ET AL.

Barrie D. Greene
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08 November 2005 appealing from the Office action mailed 08 April 2005.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

U.S. Serial No. 10/013,913

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Goldwaser et al., "L-Glutamic acid γ-monohydroxamate : A potentiator of vanadium-evoked glucose metabolism in vitro and in vivo", J Biol Chem 274: 26617-26624, 1999.

Khan et al., "Insulin regulation of glucose uptake: a complex interplay of intracellular signalling pathways", Diabetologia 45: 1475-1483, 2002.

Mueller et al., "Evidence that glucose metabolism regulates leptin secretion from cultured rat adipocytes", Endocrinology 139: 551-558, 1998.

Mueller et al., "Effects of metformin and vanadium on leptin secretin from cultured rat adipocytes", Obesity Research 8: 530-539, 2000.

Sandouk et al., "The antidiabetic agent pioglitazone increases expression of glucose transporters in 3T3-F442A cells by increasing messenger ribonucleic acid transcript stability", Endocrinology 133: 352-359, 1993.

Tafuri, S.R., "Troglitazone enhances differentiation, basal glucose uptake, and Glut 1 protein levels in 3T3-L1 adipocytes", Endocrinology 137: 4706-4712, 1996.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

35 U.S.C. § 101 (Utility)

Claims 28-32 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible, specific and substantial asserted utility or a well established utility.

Specifically, claims 28-32 are directed to an isolated antibody that specifically binds to the polypeptide of SEQ ID NO: 376. The claims also recite that the antibody is monoclonal or humanized. The claims recite that the antibody is an antibody fragment or that the antibody is labeled.

The specification discloses that "many efforts are focused on the screening of mammalian recombinant DNA libraries to identify the coding sequences for novel secreted proteins. We herein describe the identification and characterization of a novel secreted protein designated

herein as PRO1760" (pg 31, lines 29-31). However, the instant specification does not disclose that PRO1760 has significant structural similarity to any fully characterized polypeptides. There is no expression pattern, phenotype, disease or condition, binding partner, or any other specific feature that is disclosed as being associated with PRO1760. Without any information as to the specific properties of PRO1760, the mere identification of such as being a secreted polypeptide is not sufficient to impart a well-established utility to the claimed antibodies. The specification contains numerous asserted utilities for antibodies against PRO1760, including uses as a PRO1760 polypeptide detection agent, a therapeutic agent, and for the purification of PRO1760 polypeptide. None of these asserted utilities is specific for the disclosed anti-PRO1760 antibody, as each of the aforementioned utilities could be asserted for any antibody against a naturally occurring polypeptide, and further, as none of the asserted utilities requires any feature or activity that is specific to the disclosed PRO1760 or the antibodies that bind it.

The specification teaches PRO1760 scored positive as *inhibitor* of glucose or FFA (free fatty acid) uptake in rat adipocyte cells (bottom of pg 511 through pg 512; Example 149). The specification also teaches that "PRO polypeptides testing positive in this assay would be expected to be useful for the therapeutic treatment of disorders where either the stimulation or inhibition of glucose uptake by adipocytes would be beneficial, including, for example, obesity, diabetes, or hyper- or hypo-insulinemia" (pg 511, lines 38-39). However, it is not clear how PRO1760, which inhibits glucose uptake as asserted by the specification, is beneficial to such disorders because in these conditions little or no glucose is entering the cells to begin with. The cells are unable to utilize glucose. For example, Khan et al. (Diabetologia 45: 1475-1483, 2002; especially pg 1475, 1st full paragraph) teach that "type II (non-insulin-dependent) diabetes

mellitus is a clinical disorder of sugar and fat metabolism caused by an inability of insulin to promote sufficient glucose uptake into adipocyte tissue and striated muscle and to prevent glucose output from the liver". Therefore, as emphasized by Tafuri et al., Sandouk et al., Goldwaser et al., Mueller et al. 1998, and Mueller et al. 2000, one skilled in the art would want to enhance glucose uptake (not inhibit glucose uptake as asserted) into adipocyte cells. Given the paucity of information, the data do not support the implicit conclusion of the specification that PRO1760 would be useful for the therapeutic treatment of disorders where the inhibition of glucose uptake by adipocytes would be beneficial including, for example, obesity, diabetes or hyper- or hypo-insulinemia. The proposed use of the PRO1760 polypeptide and the claimed anti-PRO1760 antibodies are simply starting points for further research and investigation into potential practical uses of the polypeptide and antibodies.

The PRO1760 polynucleotide, polypeptide, and antibody of the instant application (SEQ ID NOs: 375 and 376, respectively) are not supported by either a credible, specific and substantial ("real-world") asserted utility or a well-established utility. The polynucleotide, polypeptide, and antibody do not have a substantial utility because basic research is required to study the properties and activity of the polypeptide of SEQ ID NO: 376. Until some actual and specific significance can be attributed to the protein identified in the specification as PRO1760, the instant invention is incomplete. In the absence of knowledge of the biological significance of this protein, there is no immediately obvious patentable use for it. If the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its antibodies have no patentable utilities. Since the instant specification does not disclose a

"real world" use for PRO1760 then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. § 101 as being useful.

35 U.S.C. 112, first paragraph (Enablement)

Claims 28-32 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

(10) Response to Argument

I. Rejection of claims 28-32 under the utility requirement of 35 USC §101

At the top of page 4 of the Brief, Appellant asserts that the patentable utility of the claimed antibodies that bind PRO1760 polypeptide is based upon the adipocyte glucose/FFA uptake assay. Appellant states that the assay identifies polypeptides that are expected to be useful for treating disorders wherein stimulation or inhibition of glucose uptake by adiopocytes is expected to be therapeutically effective. Appellant also argues that the glucose/FFA uptake assay as described in Example 149 of the specification was well known in the art at the time of the effective filing date of the instant application. Appellant submits that similar assays were used to identify potential anti-diabetic agents. At the bottom of page 4, at the bottom of page 11, and at the top of page 12 of the Brief, Appellant argues that a protein which inhibits glucose uptake into adipocytes is a useful therapeutic target since blocking the function of this protein would decrease the inhibition, and thus increase glucose uptake into adipocytes. Appellant states

that one of skill in the art would understand that antagonists to the PRO1760 polypeptide include antibodies. Appellant's arguments have been fully considered but are not found to be persuasive. The Examiner acknowledges that the glucose/FFA uptake assay as described in Example 149 of the specification was well known at the time of filing of the instant application. However, the specification of the instant application teaches that PRO1760 is positive as *inhibitor* of glucose and FFA uptake by adipocytes (pg 512, lines 9-10). As evidenced by Goldwaser et al., Mueller et al. 2000, Sandouk et al., and Tafuri et al. who studied glucose uptake *stimulators* (anti-diabetic agents), one skilled in the art would want to enhance glucose uptake into adipocyte cells. Disorders, such as obesity, diabetes, and hyper- or hypo-insulinemia are characterized as having reduced glucose entering adipocyte cells. For example, Khan et al. (Diabetologia 45: 1475-1483, 2002; especially pg 1475, 1st full paragraph) teach that "type II (non-insulin-dependent) diabetes mellitus is a clinical disorder of sugar and fat metabolism caused by an inability of insulin to promote sufficient glucose uptake into adipocyte tissue and striated muscle and to prevent glucose output from the liver". Thus, the skilled artisan would not expect PRO1760, which inhibits glucose uptake as asserted by the specification, to be beneficial to such disorders as diabetes as obesity, diabetes, and hyper- or hypo-insulinemia, because in these conditions little or no glucose is entering the cells to begin with. Based upon the teachings of the specification, if one skilled in the art was to administer the PRO1760 polypeptide of the instant application to a subject with obesity, diabetes, and hyper- or hypo-insulinemia, one would expect the PRO1760 polypeptide to *exacerbate* the condition. Although Appellant argues that a protein which inhibits glucose uptake into adipocytes is a useful therapeutic target since blocking the function of this protein would decrease the inhibition, and thus increase glucose uptake into adipocytes,

the instant specification does not teach that the PRO1760 polypeptide is even correlated with a disorder, particularly obesity, diabetes, and hyper- or hypo-insulinemia. For example, the specification does not teach PRO1760 protein expression levels in normal subjects or diseased subjects. In order for a polypeptide or its antibodies to be useful, as asserted, for diagnosis or treatment of a disease, there must be a well-established or disclosed correlation or relationship between the polypeptide and a disease or disorder. Significant further experimentation would be required by the skilled artisan to identify such a disease or condition in a subject. Since this asserted utility is also not present in mature form so that it could be readily used in a real world sense, the asserted utility is not substantial. Furthermore, if the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its antagonists (*e.g.*, antibodies) have no patentable utility.

At the 2nd full paragraph on page 4 of the Brief, Appellant asserts that similar glucose/FFA assays were commonly used to study the regulatory mechanisms of important molecules involved in fat metabolism. Appellant argues that PRO1760 also has utility as a pharmacological tool for investigation of leptin regulation and associated disorders such as obesity, in the same way as agents already known and used in the art (see the bottom of pg 4 through the top of pg 5 of the Brief). Appellant's arguments have been fully considered but are not found to be persuasive. The specification of the instant application does not teach that PRO1760 is involved in leptin regulation or that PRO1760 could be used as a pharmacological tool for investigation of leptin regulation. Furthermore, the proposed use of PRO1760 polypeptides as a potential therapeutic tool to investigate leptin regulation is simply a starting point for further research and investigation into potential practical uses of the polypeptides.

Appellant even states that PRO1760 has utility "as a pharmacological tool for investigation of leptin regulation" (see for example, at the bottom of page 4 of the Brief). However, MPEP §2107(I)(C) clearly discloses that "[l]abels such as "research tool," "intermediate" or "for research purposes" are not helpful in determining if an applicant has identified a specific and substantial utility for the invention". Such further research requirements make it clear that the asserted utility is not yet in currently available form, i.e., it is not substantial. This further experimentation is part of the act of invention and until it has been undertaken, Appellant's claimed invention is incomplete. See *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct., 1966), wherein the court held that:

> "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility", "[u]nless and until a process is refined and developed to this point-where specific benefit exists in currently available form-there is insufficient justification for permitting an applicant to engross what may prove to be a broad field", "Congress intended that no patent be granted on a chemical compound whose sole "utility" consists of its potential role as an object of use-testing", and "a patent is not a hunting license", "[i]t is not a reward for the search, but compensation for its successful conclusion."

In the 1st full paragraph at page 5 of the Brief, Appellant adds that no further research or investigation is required to show that PRO1760 is an inhibitor of glucose uptake, and that its function can be inhibited by molecules such as the claimed antibodies. Appellant indicates that there is no authority for the proposition that inventions useful in the research setting cannot have patentable utility. Appellant's arguments have been fully considered but are not found to be persuasive. Whereas a scale or a microarray or a gas chromatograph has patentable utility as a research tool, the objects being evaluated with those research tools do not necessarily have patentable utility. In the instant case, the PRO1760 polypeptide is not disclosed as having an

activity that can be specifically useful. Thus, further research is required to identify or reasonably confirm a specific and substantial utility. See MPEP § 2107.01(I)(C), for example. The skilled artisan would not expect PRO1760, which inhibits glucose uptake as asserted by the specification, to be beneficial to such disorders as diabetes as obesity, diabetes, and hyper- or hypo-insulinemia, because in these conditions little or no glucose is entering the cells to begin with. The instant specification does not teach a nexus between the PRO1760 polypeptide and a disease state, particularly obesity, diabetes, and hyper- or hypo-insulinemia. Thus, if the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its inhibitory molecules (*e.g.,* antibodies) have no patentable utility. The proposed uses of the PRO1760 polypeptide and antibodies that bind PRO1760 are simply starting points for further research and investigation into potential practical uses of the polypeptide and antibodies.

At page 6-9 of the Brief, Appellant reviews the legal standard for utility, with which the Examiner takes no issue.

At page 9 of the Brief, Appellant argues that the glucose/FFA uptake assay as described in Example 149 of the specification was well known in the art at the time of the effective filing date of the instant application. At pages 10-11 of the Brief, Appellant cites Tafuri et al. (Endocrinology 137(11) : 4706-4712, 1996), Sandouk et al. (Endocrinology 133(1): 352-359, 1993), Goldwaser et al. (J Biol Chem 274(37): 26617-26624, 1999), Mueller et al. (Endocrinology 139(2) : 551-558, 1998), and Mueller et al. (Obesity Research 8(7): 530-539, 2000) to support the assertion that increasing glucose uptake by adipocyte cells is a hallmark of a number of therapeutically effective agents. Appellant argues that one of skill in the art would

have reasonably accepted that various compounds, such as PRO1760, that are capable of modulating glucose uptake, have a substantial, practical, real-life utility. Appellant contends that a variety of real-life utilities, such as treatments for glucose uptake related diseases, including obesity and diabetes, are envisioned for PRO1760 and its antibody based on the glucose/FFA uptake assay results disclosed therein. Appellant's arguments have been fully considered but are not found to be persuasive. The Examiner acknowledges that the glucose/FFA uptake assay as described in Example 149 of the specification was well known at the time of filing of the instant application. However, the specification of the instant application teaches that PRO1760 is positive as *inhibitor* of glucose and FFA uptake by adipocytes (pg 512, lines 9-10). Goldwaser et al., Mueller et al. 1998, Mueller et al. 2000, Sandouk et al., and Tafuri et al., cited by Appellant and which investigate adipocyte cell metabolism, teach that the agents utilized in the assays *enhance* glucose uptake by adipocyte cells, not inhibit glucose uptake as asserted by the instant specification. The skilled artisan would want to enhance glucose uptake into adipocyte cells because disorders, such as obesity, diabetes, and hyper- or hypo-insulinemia are characterized as having reduced glucose entering adipocyte cells. For example, Khan et al. (Diabetologia 45: 1475-1483, 2002; especially pg 1475, 1st full paragraph) teach that "type II (non-insulin-dependent) diabetes mellitus is a clinical disorder of sugar and fat metabolism caused by an inability of insulin to promote sufficient glucose uptake into adipocyte tissue and striated muscle and to prevent glucose output from the liver". Thus, the skilled artisan would not expect PRO1760, which *inhibits* glucose uptake as asserted by the specification, to be beneficial to such disorders as diabetes as obesity, diabetes, and hyper- or hypo-insulinemia, because in these conditions little or no glucose is entering the cells to begin with. Based upon the teachings

of the specification, if one skilled in the art was to administer the PRO1760 polypeptide of the instant application to a subject with obesity, diabetes, and hyper- or hypo-insulinemia, one would expect the PRO1760 polypeptide to *exacerbate* the condition. Although Appellant argues that treatments for glucose uptake related diseases, including obesity and diabetes, are envisioned for PRO1760 and its antibody, the instant specification does not teach that the PRO1760 polypeptide is even correlated with a disorder, particularly obesity, diabetes, and hyper- or hypo-insulinemia. For example, the specification does not teach PRO1760 protein expression levels in normal subjects or diseased subjects. In order for a polypeptide to be useful, as asserted, for diagnosis or treatment of a disease, there must be a well-established or disclosed correlation or relationship between the polypeptide and a disease or disorder. Significant further experimentation would be required by the skilled artisan to identify such a disease or condition in a subject. Since this asserted utility is also not present in mature form so that it could be readily used in a real world sense, the asserted utility is not substantial. Furthermore, if the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its antibody have no patentable utility. The proposed use of the PRO1760 polypeptide and antibodies that bind PRO1760 is simply a starting point for further research and investigation into potential practical uses of the polypeptide and antibodies. See *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct., 1966).

At page 12 of the Brief, Appellant states that Mueller et al. 1998 disclose inhibitors of adipocyte glucose uptake also inhibit leptin gene expression and leptin secretion from adipocytes. Appellant argues that since it was known in the art at the time of filing that leptin is involved in the regulation of food intake, energy expenditure, and body fat stores and that leptin

decreases after fasting and increases after feeding, one of skill in the art would have understood that agents capable of modulating leptin regulation would be useful in investigations regarding the treatment of obesity. Appellant asserts that PRO1760, as an inhibitor of adipocyte glucose uptake, would be useful as a pharmacological tool for investigation of leptin regulation and obesity. Again, citing Mueller et al. 1998, Appellant contends that it was known in the art at the time of filing that molecules which regulated glucose uptake by adipocytes also, as a consequence, regulated leptin secretion (see the bottom of page 12 through the top of page 13 of the Brief). Appellant concludes that PRO1760 would be useful as a pharmacological tool for investigation of leptin regulation and the disorders with which it is associated, such as obesity. Appellant's arguments have been fully considered but are not found to be persuasive. The Examiner acknowledges that Mueller et al. 1998, which investigate adipocyte cell metabolism, teaches that only three inhibitors of glucose uptake, 2-DG, phloretin, and cytocholasin B, also inhibit leptin secretion and gene expression. However, the specification of the instant application does not teach that PRO1760 is involved in leptin regulation or that PRO1760 could be used as a pharmacological tool for investigation of leptin regulation or obesity. The specification does not provide an adequate nexus between PRO1760 and a disease state, such as obesity. Furthermore, the proposed use of PRO1760 polypeptides as a potential therapeutic tool to investigate leptin regulation is simply a starting point for further research and investigation into potential practical uses of the polypeptides. Mueller et al. 2000 (a post-filing date reference) even disclose that "[f]urther research, including examination of the potential roles of glucose oxidation and lipogenesis, needs to be conducted to determine the precise biochemical and molecular mechanisms by which glucose metabolism regulates leptin production" (pg 538, col 1,

last paragraph). Appellant clearly states that PRO1760 has utility "as a pharmacological tool for investigation of leptin regulation" (see for example, at the bottom of page 4 and at the top of page 13 of the Brief). However, MPEP §2107(I)(C) discloses that "[l]abels such as "research tool," "intermediate" or "for research purposes" are not helpful in determining if an applicant has identified a specific and substantial utility for the invention". Such further research requirements make it clear that the asserted utility is not yet in currently available form, i.e., it is not substantial. This further experimentation is part of the act of invention and until it has been undertaken, Appellant's claimed invention is incomplete. See *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct., 1966), wherein the court held that:

> "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility", "[u]nless and until a process is refined and developed to this point-where specific benefit exists in currently available form-there is insufficient justification for permitting an applicant to engross what may prove to be a broad field", "Congress intended that no patent be granted on a chemical compound whose sole "utility" consists of its potential role as an object of use-testing", and "a patent is not a hunting license", "[i]t is not a reward for the search, but compensation for its successful conclusion."

At page 13 of the Brief, Appellant states that PRO1760 was demonstrated to be an inhibitor of glucose uptake (Example 149) and thus, inhibiting the function of PRO1760 would increase glucose uptake. Appellant points out that antagonists of PRO1760 (for example, claimed anti-PRO1760 antibodies) are disclosed in the specification. Appellant indicates that methods of making antibodies to PRO1760 are disclosed in the specification and that methods of testing such antibodies for antagonist activity are disclosed. Appellant contends that no further research or investigation is required to show that PRO1760 is an inhibitor of glucose uptake, and that its function can be inhibited by molecules such as inhibitory antibodies. Appellant argues

that one of skill in the art would understand that inhibitors of PRO1760 could be used in the treatment of disorders for which increased glucose uptake by adipocytes would be beneficial, such as diabetes, obesity, and hyper- and hypo-insulinemia. At page 13-14 of the Brief, Appellant cites *Stiftung v. Renishaw PLC*, 945 F.2d 1173, 1180, 20 USPQ2d 1094 (Fed. Cir. 1991), *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984), and *Cross V. Iizuka*, 753 F.2d 1040, 1048 (Fed. Cir. 1985) to emphasize that the patent applicant need not demonstrate utility to a certainty. Appellant argues that the asserted utility of for PRO1760 is not based upon vague "biological properties", but a specific activity, inhibition of glucose uptake by adipocytes. Appellant's arguments have been fully considered but are not found to be persuasive. The specification of the instant application teaches that PRO1760 is positive as *inhibitor* of glucose and FFA uptake by adipocytes (pg 512, lines 9-10). Disorders, such as obesity, diabetes, and hyper- or hypo-insulinemia are characterized as having reduced glucose entering adipocyte cells. Thus, one skilled in the art would not expect PRO1760, which inhibits glucose uptake as asserted by the specification, to be beneficial to such disorders as diabetes as obesity, diabetes, and hyper- or hypo-insulinemia, because in these conditions little or no glucose is entering the cells to begin with. If one skilled in the art was to administer the PRO1760 polypeptide of the instant application to a patient with obesity, diabetes, and hyper- or hypo-insulinemia, the PRO1760 polypeptide would most likely exacerbate the condition. Although Appellant argues inhibitors of PRO1760 (such as the claimed anti-PRO1760 antibodies) could be used in the treatment of disorders for which increased glucose uptake by adipocytes would be beneficial, the instant specification does not teach that the PRO1760 polypeptide is even correlated with a disorder, particularly obesity, diabetes, and hyper- or hypo-

insulinemia. For example, the specification does not teach PRO1760 protein expression levels in normal subjects or diseased subjects. In order for a polypeptide to be useful, as asserted, for diagnosis or treatment of a disease, there must be a well-established or disclosed correlation or relationship between polypeptide and a disease or disorder. Significant further experimentation would be required by the skilled artisan to identify such a disease or condition in a subject. Since this asserted utility is also not present in mature form so that it could be readily used in a real world sense, the asserted utility is not substantial. Furthermore, if the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its antibodies have no patentable utility.

Additionally, *Carl Zeiss Stiftung v. Renishaw PLC* is inapposite to the facts of the instant case. In *Carl Zeiss Stiftung v. Renishaw PLC*, the district court had found that a claim to a probe containing a stylus which is mounted to a movable arm above a table which supports an object to be measured lacked utility because "the arbitrary presentation of part of an invention does not constitute a claim of a valid invention" and that the claimed device could not function as a probe. See *Carl Zeiss Stiftung v. Renishaw PLC* at 1180. In the instant case, however, the claims lack utility not because they are incomplete, and not because they do not set forth the best or only way to accomplish a result, and not because they are not unique, but because they do not have either a well-established utility or a specific and substantial asserted utility.

The issues in *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984) revolve around patent infringement and validity. The Examiner acknowledges that if an invention has only limited utility and is only operable in certain applications, this is not grounds for finding lack of utility. However, the claims in the instant

case lack utility because they do not have either a well-established utility or a specific and substantial asserted utility.

In *Cross v. Iizuka*, 753 F.2d 1040, 224 USPQ 739 (Fed. Cir. 1985), the Federal Circuit affirmed a finding by the Board of Patent Appeals and Interferences that a pharmacological utility had been disclosed in the application of one party to an interference proceeding. However, the instant specification has not established a practical utility for the PRO1760 polypeptide in question. Given the paucity of information in the specification, the data do not support the implicit conclusion of the specification that PRO1760 or its antibodies would be useful for the therapeutic treatment of disorders wherein glucose uptake by adipocytes would be beneficial including, for example, obesity, diabetes or hyper- or hypo-insulinemia. The proposed use of the PRO1760 polypeptides and antibodies against PRO1760 are simply starting points for further research and investigation into potential practical uses of the polypeptide and antibodies.

At the bottom of page 14 of the Brief, Appellant asserts that PRO1760, as an inhibitor of adipocyte glucose uptake, would be useful as a pharmacological tool for investigation of leptin regulation and obesity. Appellant argues at the bottom of page 14 through the top of page 15 of the Brief, that because the rejection assumes a substantial overstatement of the law, and is incorrect, it must be withdrawn. Appellant contends that there is no authority for the proposition that use as a tool for research is not a substantial utility. At page 15 of the Brief, Appellant submits that the Patent Office has recognized that just because an invention is used in a research setting does not mean that it lack utility and cites MPEP §2107.01I(C). Appellant asserts that the PTO has routinely issued patents for inventions whose only use is to facilitate research, such as

DNA ligases, acknowledged by the PTO's Training Materials to be useful. Appellant concludes that beneficial uses beyond studying the claimed invention itself have been demonstrated for PRO1760, in particular, the study of disorders associated with altered glucose uptake by adipocytes, such as diabetes, obesity, and hyper- and hypo- insulinemia. Appellant's arguments have been fully considered but are not found to be persuasive. Whereas a scale or a microarray or a gas chromatograph has patentable utility as a research tool, the objects being evaluated with those research tools do not necessarily have patentable utility. In the instant case, the PRO1760 polypeptide and the claimed antibodies that bind it, are not disclosed as having an activity that can be specifically useful. Thus, further research is required to identify or reasonably confirm a specific and substantial utility. MPEP §2107(I)(C) even states that "[l]abels such as "research tool," "intermediate" or "for research purposes" are not helpful in determining if an applicant has identified a specific and substantial utility for the invention". The skilled artisan would not expect PRO1760, which inhibits glucose uptake as asserted by the specification, to be beneficial to such disorders as diabetes as obesity, diabetes, and hyper- or hypo-insulinemia, because in these conditions little or no glucose is entering the cells to begin with. The instant specification does not teach a nexus between the PRO1760 polypeptide and a disease state, particularly obesity, diabetes, and hyper- or hypo-insulinemia. The specification of the instant application also does not teach that PRO1760 is involved in leptin regulation or that PRO1760 could be used as a pharmacological tool for investigation of leptin regulation or obesity. Thus, if the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its inhibitory molecules (*e.g.*, antibodies) have no patentable utility. The proposed uses of the PRO1760 polypeptide and the antibodies that bind it are simply

starting points for further research and investigation into potential practical uses of the polypeptide and antibodies. "Congress intended that no patent be granted on a chemical compound whose sole 'utility' consists of its potential role as an object of use-testing." *Brenner v. Manson*, 148 USPQ 689 at 696.

Furthermore, regarding Appellant's assertion that the PTO has routinely issued patents for inventions whose only use is to facilitate research, such as DNA ligases, the Examiner has inferred that Appellant is referencing Example 10 of the of the Revised Interim Utility Guidelines Training Materials. However, it is noted that the polynucleotide sequence in Example 10 of the Utility Guidelines has high homology to DNA ligase encoding nucleic acids. In this example, DNA ligases have a well-established utility in the art based on this class of protein's ability to ligate DNA. Also, the literature discloses many DNA ligases which have been fully characterized at the structural and functional levels. However, the PRO1760 polypeptide of the instant application is not supported by a specific and asserted utility or a well established utility. Again, as discussed above, whereas a scale or a microarray or a gas chromatograph has patentable utility as a research tool, the objects being evaluated with those research tools do not necessarily have patentable utility. It is further noted that the patents on batteries, automobile tires, golf balls, and treatments for a variety of human diseases are issued by the USPTO because the invention in each patent has a specific and substantial utility, not simply because the claimed subject matter is related to batteries, automobile tires, golf balls, or disease treatment. For example, a golf ball has a specific feature that makes the ball fly higher and further away as compared with other balls; a compound has a particular property that can be used to treat a specific disease, e.g., prostate cancer. Such is not the case here.

At pages 16-17 of the Brief, Appellant compares the assay protocols and expression of the data in Sandouk et al., Mueller et al. 1998, and Mueller et al. 2000 with the assay and data of the instant specification. Appellant states on page 16 of the Brief that the results of the adipocyte/FFA uptake assay would be accepted as credible by the skilled artisan and would be understood to assert a specific and substantial utility. At page 17 of the Brief, Appellant states that one of skill in the art would have accepted that compounds, such as PRO1760, that are capable of modulating glucose uptake have a substantial, practical, real-life utility, such as study and treatment of glucose uptake related diseases, including obesity and diabetes. Appellant's arguments have been fully considered but are not found to be persuasive. The Examiner takes no issue with the adipocyte assay protocols of the instant specification and of Sandouk et al., Mueller et al. 1998, and Mueller et al. 2000. The truth, or credibility, of the assertion of utility has not been questioned. Rather, the rejection sets forth that the assertion of utility is not specific or substantial. As discussed previously, the skilled artisan would not expect PRO1760, which inhibits glucose uptake as asserted by the specification, to be beneficial to such disorders as diabetes as obesity, diabetes, and hyper- or hypo-insulinemia, because in these conditions little or no glucose is entering the cells to begin with. The instant specification does not teach a nexus between the PRO1760 polypeptide and a disease state, particularly obesity, diabetes, and hyper- or hypo-insulinemia. The specification of the instant application also does not teach that PRO1760 is involved in leptin regulation or that PRO1760 could be used as a pharmacological tool for investigation of leptin regulation or obesity. Thus, if the specification discloses nothing specific and substantial about the PRO1760 polypeptide, therefore both the polypeptide and its antibodies have no patentable utility. MPEP §2107(I)(C) even states that "[l]abels such as

"research tool," "intermediate" or "for research purposes" are not helpful in determining if an applicant has identified a specific and substantial utility for the invention". The proposed uses of the PRO1760 polypeptide and the claimed antibodies that bind it are simply starting points for further research and investigation into potential practical uses of the polypeptide and antibodies. See *Brenner v. Manson*, 148 USPQ 689 (Sus. Ct., 1966).

In the 2nd paragraph at page 5 and at page 17 of the Brief, Appellant contends that the Examiner must establish that it is more likely than not that one of ordinary skill in the art would doubt the truth of the statement of utility. Appellant indicates that only after the Examiner made a proper *prima facie* showing of lack of utility, does the burden of rebuttal shift to the Appellant. Appellant's arguments have been fully considered but are not found to be persuasive. In the previous Office Actions and reiterated above, the Examiner made a *prima facie* showing that the claimed invention lacks utility and provided sufficient evidentiary basis for factual assumptions relied upon in establishing the *prima facie* showing. Essentially, Appellant has not provided evidence to demonstrate that the PRO1760 polypeptide and the claimed anti-PRO1760 antibodies of the instant application are supported by a specific and asserted utility or a well established utility. The Examiner has fully considered all evidence of record and has responded to each substantive element of Appellant's response (see above). It is noted to Appellant that MPEP § 2107.02 (part VI) also states that "only where the totality of the record continues to show that the asserted utility is not specific, substantial, and credible should a rejection based on lack of utility be maintained".

II. Rejection of claims 28-35 and 38-40 under 35 USC § 112, 1st paragraph, enablement

Claims 28-32 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention. Appellant refers to the arguments and information presented in response to the rejection under 35 U.S.C. § 101. Appellant submits that the PRO1760 polypeptides have utility in the treatment of disorders for which modulation of glucose uptake by adipocytes would be beneficial, such as obesity, diabetes, and hyper- or hypo-insulinemia, or as pharmacological tools for the study of these diseases and conditions. However, the Examiner believes that since Appellant has not provided evidence to demonstrate that the PRO1760 polypeptide and the claimed antibodies that bind it have a specific and substantial asserted utility or a well established utility, one skilled in the art would not know how to use the claimed invention.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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10 February 2006

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